

Position Statement on Sealed Truss Placement Diagrams for Commercial Projects in the State of Nebraska

Released June 15, 2010

Introduction:

SBCA has written this *Tech Note* to provide some direction on how to handle requests for seals on Truss Placement Diagrams. There is much confusion in the market in understanding what a Truss Placement Diagram is and what it is used for. This *Tech Note* provides answers to these questions and explains why sealing a Truss Placement Diagram may be improper and may even violate professional engineering laws (see [Appendix A](#) for background and analysis).

Issue:

Certain jurisdictions in Nebraska are requesting engineering seals on Truss Placement Diagrams prepared by the Truss Manufacturer for commercial projects. These Truss Placement Diagrams are sometimes also referred to as truss placement plans, truss layouts, framing plans or framing layouts. It has been suggested that if a Truss Designer were to seal a Truss Placement Diagram they could be inappropriately held responsible for ensuring the proper flow of loads through the truss to the bearing and support structure below the truss and into the foundation. The following recommendations should be used to assess all the ramifications of providing seals on Truss Placement Diagrams for commercial projects. This *Tech Note* uses as its basis *The Nebraska Administrative Code*, *The Nebraska Engineers and Architects Regulation Act*¹, and the *2006 International Building Code (IBC)*.

Summary of Analysis and Recommendations:

The Truss Placement Diagram is **NOT** to be viewed as an engineering document. It is provided by the component manufacturer to assist the installer in properly locating the components within the structure. There is no engineering input provided in the preparation of the Truss Placement Diagram. Since Truss Placement Diagrams are generally created neither by nor under the immediate personal supervision of a licensed design professional, professional engineering law suggests that they cannot be sealed. Requesting a Truss Design Engineer to seal a non-registered person's work is illegal in Nebraska per *The Nebraska Administrative Code* (see [Appendix B](#) for the full text) and *The Nebraska Engineers and Architects Regulation Act* (see [Appendix C](#) for the full text).

NEBRASKA ADMINISTRATIVE CODE

5.5.2 The architect or professional engineer shall not sign or seal drawings, specifications, reports or other professional work for which he or she does not have direct supervision...

6.1.4 The responsible architect or professional engineer shall identify all work that he or she has prepared as well as all work that has been prepared under the licensee's direct supervision by applying his or her seal to each sheet of original drawings.

ENGINEERS AND ARCHITECTS REGULATION ACT

Section 81-3437(d) ...The application of the licensee's seal and signature shall constitute certification that the work was done by the licensee or under the licensee's control.

Section 81-3454(1) A professional engineer shall not affix his or her seal or signature to sketches, working drawings, specifications, or other documents developed by others not under his or her direct supervision...

¹ www.ea.state.ne.us/e_and_a_act.html

All of the necessary truss engineering and analysis for each individual truss that is going to be applied to a building is found on the Truss Design Drawings. According to *ANSI/TPI 1 1-2002* (see [Appendix D](#)), the standard referenced by the *2006 IBC* for the manufacture of metal plate connected wood trusses, the building design, flow of loads through the building and ensuring that the flow of loads matches the building design concepts is reserved as a responsibility of the Building Designer.

ANSI/TPI 1-2002 Chapter 2

2.5.2 The Building Designer...shall provide the following:

- 2.5.2.1 All Structural Element and Truss orientations and locations;
 - 2.5.2.2 Information to fully determine all Truss profiles;
 - 2.5.2.3 All Structural Element and Truss bearing conditions;
 - 2.5.2.4 The location, direction, and magnitude of all dead and live loads applicable to each Structural Element and Truss...
 - 2.5.2.5 All Structural Element and Truss anchorage designs required to resist uplift, gravity, and lateral loads;
 - 2.5.2.6 Allowable vertical and horizontal deflection criteria and any specific criteria...
 - 2.5.2.7 Proper transfer of design loads affecting the Structural Elements and Trusses;
 - 2.5.2.8 Adequate connections between Trusses and between Structural Elements...but not Truss to Truss girder connections...
 - 2.5.2.9 Permanent bracing design for the Building...and permanent bracing for all Structural Elements and Trusses....
- 2.5.3 The Building Designer shall be responsible for the adequacy of the design of the Building Structural System [and]...shall evaluate the effect of the Trusses and the Structural Elements supplied, on the Building Structural System

If a Truss Placement Diagram is provided, it is recommended that the project's building designer or designated Registered Design Professional (RDP) review and approve it to ensure that the assumed load paths match up with the building design concepts that they have employed.

Section 2303.4.1.3 of the *2006 IBC* (see [Appendix E](#)) includes the following regarding the "Truss Placement Diagram":

2006 IBC 2303.4.1.3 Truss placement diagram. The truss manufacturer shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.

Exception: When the truss placement diagram is prepared under the direct supervision of a registered design professional, it is required to be signed and sealed.

To further clear up any confusion on this issue, Section 2303.4.2 of the *2009 IBC*, was revised to include the following regarding the "Truss Placement Diagram":

2009 IBC 2303.4.2 Truss placement diagram. The truss manufacturer shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams that serve only as a guide for installation and do not deviate from the *permit* submittal drawings shall not be required to bear the seal or signature of the truss designer.

The Nebraska Administrative Code, The Nebraska Engineers and Architects Regulation Act, and the IBC provide the basis upon which to evaluate the need to provide an engineer's seal on a Truss Placement Diagram. Based on the building code regulations and professional engineering law, Truss Placement Diagrams do not require a professional engineer's seal unless prepared under the direct supervision of an RDP.

Appendix A: Background & Analysis

Commercial Construction Documents:

In most jurisdictions, the Building Designer of a non-residential structure must be an RDP, as defined above, pursuant to the 2006 IBC Section 106.1 (see [Appendix E](#)):

106.1 Submittal documents. ...The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

The construction documents should in turn clearly define the scope of the work proposed by the Building Designer or RDP:

106.1.1 Information on construction documents. ...Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official.

In preparing the construction documents, the RDP needs to provide the Truss Designer with the information necessary to properly design the trusses for the building. According to *ANSI/TPI 1-2002*, Chapter 2 (see [Appendix D](#)), which is adopted by reference in the 2006 IBC (see [Appendix E](#), Sections 101.4, 102.4, 2303.4.2, and Chapter 35 “Reference Standards”), the following information should be provided:

ANSI/TPI 1-2002 Chapter 2

2.5.2 The Building Designer...shall provide the following:

2.5.2.1 All Structural Element and Truss orientations and locations;

2.5.2.2 Information to fully determine all Truss profiles;

2.5.2.3 All Structural Element and Truss bearing conditions;

2.5.2.4 The location, direction, and magnitude of all dead and live loads applicable to each Structural Element and Truss...

2.5.2.5 All Structural Element and Truss anchorage designs required to resist uplift, gravity, and lateral loads;

2.5.2.6 Allowable vertical and horizontal deflection criteria and any specific criteria...

2.5.2.7 Proper transfer of design loads affecting the Structural Elements and Trusses;

2.5.2.8 Adequate connections between Trusses and between Structural Elements...but not Truss to Truss girder connections...

2.5.2.9 Permanent bracing design for the Building...and permanent bracing for all Structural Elements and Trusses...

2.5.3 The Building Designer shall be responsible for the adequacy of the design of the Building Structural System [and]...shall evaluate the effect of the Trusses and the Structural Elements supplied, on the Building Structural System.

The IBC is clear that the Building Designer is the RDP who has responsibility for the overall building design in accordance with *The Nebraska Administrative Code* and *The Nebraska Engineers and Architects Regulation Act*. The Building Designer is also the person who reviews and coordinates all of the Construction Documents prepared by others (including the Truss Design Drawings and Truss Placement Diagrams) to make sure they do not conflict with the scope of the project, the specifics of which are listed in IBC Section 106.3.4.1 (see [Appendix E](#)):

106.3.4.1 General. When it is required that documents be prepared by a registered design professional, the building official shall be authorized to require the owner to engage and designate on the building permit application a registered design professional who shall act as the registered design professional in responsible charge. ...The registered design professional in responsible charge shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.

The Truss Placement Diagram is an illustration identifying the assumed location for each truss based on the Truss Manufacturer's interpretation of the Construction Documents. The Truss Placement Diagram is not an engineering document and should never be considered a replacement for a structural framing plan prepared by the Building Designer. If a seal is required on a Truss Placement Diagram, it should be evaluated by the Building Designer and signed and sealed as reviewed and approved in conformance with the overall building design. *The Nebraska Engineers and Architects Regulation Act* (see [Appendix C](#) for the full text) allows for this review and approval by the Building Designer:

Section 81-3454(1). A professional engineer...may sign or seal those portions of the technical submissions that are not required by the Engineers and Architects Regulation Act to be prepared by or under the direct supervision of a professional engineer if the professional engineer has reviewed or adapted in whole or in part such submission and integrated them into his or her work.

Truss Design and Preparation of Truss Design Drawings:

Assuming the requisite information is provided within the Construction Documents issued by the RDP or Building Designer, the Truss Designer's sole responsibility is to properly design the individual trusses according to this information. Once designed, a truss is then depicted on a Truss Design Drawing. The Truss Designer is therefore specifically responsible for the single truss design depicted on each Truss Design Drawing.

Who Typically Prepares Truss Placement Diagrams?

Assuming the requisite information is provided in the Construction Documents, Truss Placement Diagrams are prepared by Truss Manufacturer personnel who are not typically Truss Design Engineers. Often the Truss Placement Diagrams are prepared by the Truss Manufacturer's salespeople or individuals who work as truss technicians or truss take-off specialists (Truss Designers). All of these people are highly trained and skilled in the work they do but are usually not engineers. Because these Truss Placement Diagrams are typically prepared outside of the Truss Design Engineer's scope of work, they might not be reviewed or even seen by the Truss Design Engineer and are therefore not prepared under the Truss Design Engineer's direct supervision.

Requiring Truss Placement Diagrams to be Sealed Would Violate Nebraska Law:

Since Truss Placement Diagrams are generally created neither by nor under the immediate personal supervision of a licensed design professional, they cannot be sealed. Requesting a Truss Design Engineer to seal a non-registered person's work is illegal in Nebraska per *The Nebraska Administrative Code* (see [Appendix B](#) for the full text) and *The Nebraska Engineers and Architects Regulation Act* (see [Appendix C](#) for the full text), which state in pertinent part:

NEBRASKA ADMINISTRATIVE CODE

5.5.2 The architect or professional engineer shall not sign or seal drawings, specifications, reports or other professional work for which he or she does not have direct supervision...

6.1.4 The responsible architect or professional engineer shall identify all work that he or she has prepared as well as all work that has been prepared under the licensee's direct supervision by applying his or her seal to each sheet of original drawings.

ENGINEERS AND ARCHITECTS REGULATION ACT

Section 81-3437(d) ...The application of the licensee's seal and signature shall constitute certification that the work was done by the licensee or under the licensee's control.

Section 81-3454(1) A professional engineer shall not affix his or her seal or signature to sketches, working drawings, specifications, or other documents developed by others not under his or her direct supervision...

Why are Truss Placement Diagrams Prepared?

Truss Placement Diagrams are intended to assist customers, erectors and code enforcement officials in positioning or locating the trusses and related structural components supplied by the component manufacturer.

Their function is to serve as detailed installation instructions. They indicate the component manufacturer's assumed location for each truss or related component that has been designed and manufactured. A Truss Placement Diagram would be best described as a "shop drawing".

"Shop drawings," as defined by the Federal Acquisition Regulation (FAR)², are typically drawings submitted by the construction contractor or a subcontractor at the different phases or stages of construction or required under a construction contract, showing in detail either or both of the following:

- (1) The proposed fabrication and assembly of structural elements.
- (2) The installation (i.e., form, fit, and attachment details) of materials or equipment.

FAR is the primary regulation for use by all Federal Executive Agencies in their acquisition of supplies and services with appropriate funds.

Similar to a shop drawing, a Truss Placement Diagram is intended as an installation detail and is covered by engineering exemptions in many states. The state of Nebraska specifically exempts field layout and installation work from requiring an engineer's seal per *The Nebraska Administrative Code* (see [Appendix B](#) for the full text), which states in pertinent part:

NEBRASKA ADMINISTRATIVE CODE

10.5.3 The performance of field layout and installation work by employees of construction companies on projects designed by a licensed person or persons, including...layout of construction installation and support work does not constitute the practice of engineering or architecture.

The Nebraska Engineers and Architects Regulation Act (see [Appendix C](#)), provides a definition for the Practice of Engineering (see [Appendix F](#) for other defined terms).

ENGINEERS AND ARCHITECTS REGULATION ACT

Section 81-3421. Practice of engineering means any service or creative work if the adequate performance of the service or work requires engineering education, training, and experience in the application of special knowledge of the mathematical, physical, and engineering sciences...

The preparation of a Truss Placement Diagram does not require the need for education in mathematical, physical, or engineering sciences.

The International Code Committee (ICC) has Codified that Truss Placement Diagrams Should Not be Sealed:

The 2003 edition of the *International Building Code* did not clearly define a Truss Placement Diagram. As such, some incorrectly inferred that they were part of the "Truss Design Drawings," which are defined as follows:

2003 IBC 2303.4.1 Truss design drawings. Truss construction documents shall be prepared by a registered design professional and shall be provided to the building official and approved prior to installation.

Information on the Truss Placement Diagram was added to Section 2303.4.1.3 of the *2006 IBC* (see [Appendix E](#)):

2006 IBC 2303.4.1.3 Truss placement diagram. The truss manufacturer shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss

² www.acquisition.gov/far

submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.

Exception: When the truss placement diagram is prepared under the direct supervision of a registered design professional, it is required to be signed and sealed.

To further clear up any confusion on this issue, Section 2303.4.2 of the *2009 IBC*, was revised to include the following regarding the Truss Placement Diagram:

2009 2303.4.2 Truss placement diagram. The truss manufacturer shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams that serve only as a guide for installation and do not deviate from the *permit* submittal drawings shall not be required to bear the seal or signature of the truss designer.

Conclusion:

The Nebraska Administrative Code, The Nebraska Engineers and Architects Regulation Act, and the International Building Code provide the basis upon which to evaluate the need to provide an engineer's seal on a Truss Placement Diagram. Based on the building code regulations and professional engineering law, Truss Placement Diagrams do not require a professional engineer's seal unless prepared under the direct supervision of an RDP.

Appendix B

NEBRASKA ADMINISTRATIVE CODE³ Title 110 - Board of Engineers and Architects

CHAPTER 5; CODE OF PRACTICE

5.5 Professional Conduct

5.5.1 Each office maintained for the purpose of serving the public through professional engineering or architectural work including the preparation of drawings, specifications, reports and the administration of contract documents shall have a qualified architect or professional engineer in charge of such office and the preparation of such work. This involvement shall be of such nature as to provide the licensee with direct knowledge of the work performed as well as the opportunity to exercise direct and supervisory control of the activity of that office.

5.5.2 The architect or professional engineer shall not sign or seal drawings, specifications, reports or other professional work for which he or she does not have direct supervision; provided, however, that in the case of the portions of such professional work prepared by the architect's or professional engineer's consultants, licensed under the law of the State of Nebraska or another state, the architect or professional engineer may sign or seal that portion of the professional work if the architect or professional engineer has reviewed such portion, has coordinated its preparation and accepts responsibility for its adequacy.

5.5.3 The architect or professional engineer shall neither offer nor make any gifts, other than gifts of nominal value (including, for example, reasonable entertainment and hospitality), with the intent of influencing the judgment of an existing or prospective client in connection with a project in which the architect or professional engineer is interested.

5.5.4 The architect or professional engineer shall not engage in conduct involving fraud or wanton disregard of the rights of others.

5.5.5 The architect or professional engineer shall not engage in grossly immoral or dishonorable conduct which would provide evidence of unfitness to perform the tasks required by clients or would provide evidence of a degree of proficiency which is not sufficient to serve the public interest.

5.5.6 The architect or professional engineer shall not engage in misleading or untruthful or improbable statements, or flamboyant, exaggerated or extravagant claims concerning the licensee's professional excellence or abilities in advertisements or public statements.

5.5.7 The architect or professional engineer shall not knowingly aid or abet the practice or the performance of activities requiring a license by a person not licensed to conduct such practice or activity.

5.6 Practice of Architecture and Engineering

5.6.1 The practice of architecture shall be as defined in Neb. Rev. Stat. § 81-3420 of the E&A Act.

5.6.2 The practice of engineering shall be as defined in Neb. Rev. Stat. § 81-3421 of the E&A Act.

CHAPTER 6; THE LICENSEE SEAL

6.1 Use of the Seal

6.1.1 Each person licensed as an architect or professional engineer is required to acquire a seal which bears the licensee's name, his or her license number, the words "State of Nebraska" and whether the individual is licensed to practice as a professional engineer, with discipline specified, or an architect.

³ www.ea.state.ne.us/PDFs/booklet.pdf

6.1.2 The purpose of requiring each architect or professional engineer to acquire a seal is to assist in identification of the design professional responsible for work performed under the requirements of Neb. Rev. Stat. §§ 81-3401 through 81-3455.

6.1.3 The seal used by a licensee, whether an embossing, computer generated, or other type of seal shall be legible. In the absence of legibility, the seal is invalid.

6.1.4 The responsible architect or professional engineer shall identify all work that he or she has prepared as well as all work that has been prepared under the licensee's direct supervision by applying his or her seal to each sheet of original drawings.

6.1.5 All specifications, reports, studies, and other documents prepared as professional engineering or architectural service shall be sealed on the title page and/or the first page as well as the last page of the document by the individual licensee responsible for the work.

6.1.6 No seal shall be valid unless the licensee signs his or her name across the face of the seal and indicates the date on which the material was signed.

6.1.7 Documents, clearly marked as "Draft" prepared for preliminary submission and review do not require the professional's seal, signature, and date.

6.1.8 Documents placed on the internet shall not include a seal unless they also contain an electronic signature protected with an electronic revision approval system.

6.3 The Coordinating Professional

6.3.1 The board recognizes the following as interpretations of coordinating professional provisions of the E&A Act:

6.3.1.1 The Coordinating Professional is a licensed professional member of the design team.

6.3.1.2 The Coordinating Professional's seal connotes coordination of design disciplines.

6.3.1.3 The Coordinating Professional may not practice outside his or her expertise.

6.3.1.4 The Coordinating Professional shall act as project liaison with the governing building official.

6.3.1.5 The Coordinating Professional shall not comprise nor act as a construction manager, a general engineering consultant, a contractor, a developer, or a design builder unless qualified as a licensed professional member of the design team.

6.3.2 The Coordinating Professional's seal connotes coordination of design disciplines, but does not signify responsible charge for engineering or architectural work.

CHAPTER 10; EXEMPTIONS; CLARIFICATION

10.5 The Practice of Engineering and Architecture

The practice of engineering and architecture with reference to building projects:

10.5.1 The development and utilization of construction means and methods such as schedules, work plans, work orders and directions, procedures, construction calculations, selection, provision and use of temporary facilities in support of construction activities, reports, selection and use of safety procedures and facilities, instructions and similar items customarily used by contractors to implement construction work designed by licensed persons does not constitute the practice of engineering or architecture.

10.5.2 The preparation by employees of construction companies of ancillary drawings and data, such as field details, shop drawings, product data, conceptual drawings, calculations, diagrammatic instructions and similar documents and information, which are typically utilized to implement the construction of a facility designed by a licensed person does not constitute the practice of engineering or architecture.

10.5.3 The performance of field layout and installation work by employees of construction companies on projects designed by a licensed person or persons, including construction work such as field staking and measurement; installation of material or equipment at designed locations or locations selected in the field; field fitup and modification work; and layout of construction installation and support work does not constitute the practice of engineering or architecture.

10.5.4 The estimate of the cost of construction work (including the extent of the cost of changes in the work) by construction companies including such things as preparing and reviewing preliminary concepts of the project, identifying the scope of the construction work, preparing preliminary schedules and sequences for the construction work, and evaluating the estimates of subcontractors and suppliers, does not constitute the practice of engineering or architecture.

10.5.5 The performance of work customarily involved in project management of construction work on projects designed by licensed persons does not constitute the practice of engineering or architecture. Examples would be:

10.5.5.1 The evaluation of the project and its budget;

10.5.5.2 Services relating to financing the project;

10.5.5.3 Recommendations on construction feasibility, timing of design and construction, and factors relating to construction costs such as alternative designs prepared by a licensed professional;

10.5.5.4 Procurement of labor and materials;

10.5.5.5 Coordination and evaluation of subcontractor performance;

10.5.5.6 Preparation of schedules;

10.5.5.7 Estimating the project costs;

10.5.5.8 Performing construction work; and

10.5.5.9 Reporting on the progress and costs of the work.

Appendix C

ENGINEERS AND ARCHITECTS REGULATION ACT⁴

Section 81-3421. Practice of engineering, defined. Practice of engineering means any service or creative work if the adequate performance of the service or work requires engineering education, training, and experience in the application of special knowledge of the mathematical, physical, and engineering sciences to include such services or creative work as consultation, investigation, evaluation, planning, design and design coordination of engineering works and systems, planning the use of land and water, performing engineering surveys and studies, the review of construction for the purpose of monitoring compliance with drawings and specifications, administration of construction contracts, and acting as a coordinating professional, and any of which embraces such services or work, either public or private, in connection with any utilities, structures, buildings, machines, equipment, processes, work systems, projects, and industrial or consumer products or equipment of a mechanical, electrical, hydraulic, pneumatic, or thermal nature, insofar as they involve safeguarding life, health, or property, and including such other professional services as may be necessary to the planning, progress, and completion of any engineering services. The practice of engineering does not include the practice of architecture.

Design coordination includes the review and coordination of those technical submissions prepared by others, including, but not limited to, as appropriate and without limitation, consulting engineers, architects, landscape architects, land surveyors, and other professionals working under the direction of the professional engineer.

Engineering surveys includes all survey activities required to support the sound conception, planning, design, construction, maintenance, and operation of engineering projects but excludes the surveying of real property for the establishment of land boundaries, rights-of-way, easements, and the dependent or independent surveys or resurveys of the public land survey system.

A person shall be construed to practice or offer to practice engineering, within the meaning and intent of the Engineers and Architects Regulation Act, if he or she: (1) Practices any branch of the profession of engineering; (2) by verbal claim, sign, advertisement, letterhead, or card or in any other way, represents himself or herself to be a professional engineer; (3) through the use of some other title, implies that he or she is a professional engineer or licensed under the Engineers and Architects Regulation Act; or (4) holds himself or herself out as able to perform or does perform any engineering service or work or any other service designated by the practitioner which is recognized by the board as engineering. The practice of engineering does not include the services ordinarily performed by subordinates under direct supervision of a professional engineer or those commonly designated as locomotive, stationary, and marine operating engineers, power plant operating engineers, or manufacturers who supervise the operation of or operate machinery or equipment or who supervise construction within their own plant.

Section 81-3437. Certificate of licensure; issuance; seal; use; enrollment card; issuance.

(1) The board shall issue to any applicant who, on the basis of education, experience, and examination, has met the requirements of the Engineers and Architects Regulation Act a certificate of licensure giving the licensee proper authority to carry out the prerogatives of the act. The certificate of licensure shall carry the designation Licensed Architect or Licensed Professional (discipline) Engineer. The certificate shall give the full name of the licensee and license number and shall be signed by the chairperson of the board, the secretary of the board, and a board member representing the respective profession under the seal of the board.

(2) The certificate shall be prima facie evidence that the person is entitled to all rights, privileges, and responsibilities of an architect or a professional engineer while the certificate of licensure remains unrevoked and unexpired.

(3)(a) Each licensee authorized to practice architecture or engineering must obtain a seal. It shall be unlawful for a licensee to affix his or her seal and signature or to permit his or her seal and signature to be affixed to any document after the expiration of the certificate or for the purpose of aiding or abetting any other person to evade or attempt to evade the act.

⁴ www.ea.state.ne.us/PDFs/statute.pdf

(b) The seal may be a rubber stamp or may be generated electronically. Whenever the seal is applied, the licensee's written signature and the date shall be across the seal. No further words or wording are required. Electronic signatures applied to electronic seals must be protected with an electronic revision approval system. Documents without electronic revision approval protection that are transmitted electronically to a client or a governmental agency shall have the seal removed from the file. The electronic media shall have the following inserted in lieu of the seal, signature, and date: This document was originally issued and sealed by (name of sealer), (license number), on (date of sealing). This media should not be considered a certified document.

(c) The seal, signature, and date shall be placed on all technical submissions and calculations whenever presented to a client or any public or governmental agency.

(d) The seal, signature, and date shall be placed on all originals, copies, tracings, or other reproducible drawings and the first and last pages of specifications, reports, and studies in such a manner that the seal, signature, and date will be reproduced and be in compliance with rules and regulations of the board. The application of the licensee's seal and signature shall constitute certification that the work was done by the licensee or under the licensee's control. In the case of multiple sealings, the first or title page shall be sealed, signed, and dated by all involved. In addition, each sheet shall be sealed, signed, and dated by the licensee responsible for each sheet. In the case of an organization, each sheet shall be sealed, signed, and dated by the licensee involved. The architect or professional engineer in responsible charge shall sign, seal, and date the title or first sheet.

(e) In the case of a temporary permit issued to a licensee of another state, the licensee shall use his or her state of licensure seal and shall affix his or her signature and temporary permit to all his or her work.

(f) The design of the seal shall be determined by the board. The following information shall be on the seal: State of Nebraska; licensee's name; licensee's license number; and the words Architect or Professional (discipline) Engineer.

(g) Projects involving more than one licensed architect or professional engineer shall have one designated as the coordinating professional. The coordinating professional shall apply his or her seal and signature and the date to the cover sheet of all documents and denote the seal as that of the coordinating professional.

(4) The board shall issue to any applicant who, in the opinion of the board, has met the requirements of the act an enrollment card as engineer-intern which indicates that his or her name has been recorded as such in the board office. The engineer-intern enrollment card does not authorize the holder to practice as a professional engineer.

Section 81-3454. Sealing and signing of technical submissions by professional engineer.

(1) A professional engineer shall not affix his or her seal or signature to sketches, working drawings, specifications, or other documents developed by others not under his or her direct supervision, except that in the case of the portions of such technical submissions prepared under the direct supervision of another professional engineer employed by the first professional engineer or by his or her firm, he or she may sign and seal those portions of the technical submissions if the professional engineer has reviewed such portions and has coordinated their preparation or integrated them into his or her work. He or she may sign or seal those portions of the technical submissions that are not required by the Engineers and Architects Regulation Act to be prepared by or under the direct supervision of a professional engineer if the professional engineer has reviewed or adapted in whole or in part such submission and integrated them into his or her work.

(2) In the case of a temporary permit issued to a professional engineer of another state, the licensee shall use his or her state of licensure seal and shall affix his or her signature and a copy of the temporary permit to all his or her work.

Appendix D

ANSI/TPI 1-2002

National Design Standard for Metal Plate Connected Wood Truss Construction

Chapter 2 – Standard Responsibilities in the Design Process Involving Metal Plate Connected Wood Trusses

2.5 BUILDING STRUCTURAL SYSTEM DESIGN DOCUMENTS

- 2.5.1 The Building Designer, through the Structural Design Documents shall provide that the Structural Elements and Trusses shall not be subjected to adverse influences including, but not limited to moisture, temperature, and corrosive chemicals and gases. This provision shall specifically include notice for the Truss Designer of environments expected to result in wood moisture content exceeding 19 percent, and temperatures and/or corrosion potential that are unusually high relative to typical wood buildings.
- 2.5.2 The Building Designer, through the Structural Design Documents shall provide information sufficiently accurate and reliable to be used for facilitating the supply of the Structural Elements and for developing the design of the Trusses for the Building, and shall provide the following:
- 2.5.2.1 All Structural Element and Truss orientations and locations;
- 2.5.2.2 Information to fully determine all Truss profiles;
- 2.5.2.3 All Structural Element and Truss bearing conditions;
- 2.5.2.4 The location, direction, and magnitude of all dead and live loads applicable to each Structural Element and Truss including, but not limited to, loads attributable to: roof, floor, partition including any directions other than given in ANSI/TPI 1-2002, mechanical, fire sprinkler, attic, storage, rain loads and ponding, design wind speed and exposure category, snow, snow drift, unbalanced snow load, and seismic forces;
- 2.5.2.5 All Structural Element and Truss anchorage designs required to resist uplift, gravity, and lateral loads;
- 2.5.2.6 Allowable vertical and horizontal deflection criteria and any specific criteria per ANSI/TPI 1-2002;
- 2.5.2.7 Proper transfer of design loads affecting the Structural Elements and Trusses;
- 2.5.2.8 Adequate connections between Trusses and between Structural Elements, including Truss to Structural Element connections, but not Truss to Truss girder connections except such connections that are excluded from the scope of the Truss Designer's responsibilities.
- 2.5.2.9 Permanent bracing design for the Building, including bracing to resist wind, seismic, or other lateral forces, and permanent bracing for all Structural Elements and Trusses. The permanent bracing design shall incorporate the continuous lateral chord and web member bracing that is designated on the individual Truss Design Drawings into the overall bracing for the entire Building Structural System.
- 2.5.3 The Building Designer shall be responsible for the adequacy of the design of the Building Structural System or the adequacy of the Structural Design Documents. The Building Designer shall evaluate the effect of the Trusses and the Structural Elements supplied, on the Building Structural System.

Appendix E

2006 INTERNATIONAL BUILDING CODE

CHAPTER 1: ADMINISTRATION

SECTION 101: GENERAL

101.4 Referenced codes. The other codes listed in Sections 101.4.1 to 101.4.7 and referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference.

SECTION 102: APPLICABILITY

102.4 Referenced codes and standards. The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

SECTION 106: CONSTRUCTION DOCUMENTS

106.1 Submittal documents. Construction documents, statement of special inspections and other data shall be submitted in one or more sets with each permit application. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that review of construction documents is not necessary to obtain compliance with this code.

106.1.1 Information on construction documents. Construction documents shall be dimensioned and drawn upon suitable material. Electronic media documents are permitted to be submitted when approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official.

106.3.4 Design professional in responsible charge.

106.3.4.1 General. When it is required that documents be prepared by a registered design professional, the building official shall be authorized to require the owner to engage and designate on the building permit application a registered design professional who shall act as the registered design professional in responsible charge. If the circumstances require, the owner shall designate a substitute registered design professional in responsible charge who shall perform the duties required of the original registered design professional in responsible charge. The building official shall be notified in writing by the owner if the registered design professional in responsible charge is changed or is unable to continue to perform the duties.

The registered design professional in responsible charge shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building. Where structural observation is required by Section 1709, the statement of special inspections shall name the individual or firms who are to perform structural observation and describe the stages of construction at which structural observation is to occur (see also duties specified in Section 1704).

106.3.4.2 Deferred submittals. For the purposes of this section, deferred submittals are defined as those portions of the design that are not submitted at the time of the application and that are to be submitted to the building official within a specified period.

Deferral of any submittal items shall have the prior approval of the building official. The registered design professional in responsible charge shall list the deferred submittals on the construction documents for review by the building official.

Documents for deferred submittal items shall be submitted to the registered design professional in responsible charge who shall review them and forward them to the building official with a notation indicating that the deferred submittal documents have been reviewed and been found to be in general conformance to the design of the building. The deferred submittal items shall not be installed until the design and submittal documents have been approved by the building official.

Chapter 23: WOOD

SECTION 2303: MINIMUM STANDARDS AND QUALITY

2303.4 Trusses.

2303.4.1 Design. Wood trusses shall be designed in accordance with the provisions of this code and accepted engineering practice. Members are permitted to be joined by nails, glue, bolts, timber connectors, metal connector plates or other approved framing devices.

2303.4.1.1 Truss designer. The individual or organization responsible for the design of trusses.

2303.4.1.2 Truss design drawings. The written, graphic and pictorial depiction of each individual truss shall be provided to the building official and approved prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below:

1. Slope or depth, span and spacing;
2. Location of joints;
3. Required bearing widths;
4. Design loads as applicable;
5. Top chord live load (including snow loads);
6. Top chord dead load;
7. Bottom chord live load;
8. Bottom chord dead load;
9. Concentrated loads and their points of application as applicable;
10. Controlling wind and earthquake loads as applicable;
11. Adjustments to lumber and metal connector plate design value for conditions of use;
12. Each reaction force and direction;
13. Metal connector plate type, size, thickness or gage, and the dimensioned location of each metal connector plate except where symmetrically located relative to the joint interface;
14. Lumber size, species and grade for each member;
15. Connection requirements for:
 - 15.1. Truss to truss;
 - 15.2. Truss ply to ply; and
 - 15.3. Field splices.
16. Calculated deflection ratio and maximum vertical and horizontal deflection for live and total load as applicable;
17. Maximum axial tensile and compression forces in the truss members; and
18. Required permanent individual truss member bracing and method per Section 2303.4.1.5, unless a specific truss member permanent bracing plan for the roof or floor structural system is provided by a registered design professional.

Where required by one of the following, each individual truss design drawing shall bear the seal and signature of the truss designer:

1. Registered design professional; or
2. Building official; or
3. Statutes of the jurisdiction in which the project is to be constructed.

Exceptions:

1. When a cover sheet/truss index sheet combined into a single cover sheet is attached to the set of truss design drawings for the project, the single sheet/truss index sheet is the only document that needs to be signed and sealed within the truss submittal package.
2. When a cover sheet and a truss index sheet are separately provided and attached to the set of truss design drawings for the project, both the cover sheet and the truss index sheet are the only documents that need to be signed and sealed within the truss submittal package.

2303.4.1.3 Truss placement diagram. The truss manufacturer shall provide a truss placement diagram that identifies the proposed location for each individually designated truss and references the corresponding truss design drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the job site. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.

Exception: When the truss placement diagram is prepared under the direct supervision of a registered design professional, it is required to be signed and sealed.

2303.4.1.4 Truss submittal package. The truss submittal package shall consist of each individual truss design drawing, the truss placement diagram for the project, the truss member permanent bracing specification and, as applicable, the cover sheet/truss index sheet.

2303.4.1.5 Truss member permanent bracing. Where permanent bracing of truss members is required on the truss design drawings, it shall be accomplished by one of the following methods:

1. The trusses shall be designed so that the buckling of any individual truss member can be resisted internally by the structure (e.g. buckling member T-bracing, L-bracing, etc.) of the individual truss. The truss individual member buckling reinforcement shall be installed as shown on the truss design drawing or on supplemental truss member buckling reinforcement diagrams provided by the truss designer.
2. Permanent bracing shall be installed using standard industry bracing details that conform with generally accepted engineering practice. Individual truss member continuous lateral bracing location(s) shall be shown on the truss design drawing.

2303.4.1.6 Anchorage. All transfer of loads and anchorage of each truss to the supporting structure is the responsibility of the registered design professional.

2303.4.1.7 Alterations to trusses. Truss members and components shall not be cut, notched, drilled, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional. Alterations resulting in the addition of loads to any member (e.g., HVAC equipment, water heater) shall not be permitted without verification that the truss is capable of supporting such additional loading.

2303.4.2 Metal-plate-connected trusses. In addition to Sections 2303.4.1 through 2303.4.1.7, the design, manufacture and quality assurance of metal-plate-connected wood trusses shall be in accordance with TPI 1. Manufactured trusses shall comply with Section 1704.6 as applicable.

Chapter 35: REFERENCED STANDARDS

TPI

Truss Plate Institute
583 D'Onofrio Drive, Suite 200
Madison, WI 53719

Standard reference number	Title	Referenced in code section number
TPI 1—2002	National Design Standards for Metal-plate-connected Wood Truss Construction	2303.4.2, 2306.1

Appendix F

Key Definitions

CONSTRUCTION DOCUMENTS: Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building permit. Construction drawings shall be drawn to an appropriate scale.

COORDINATING PROFESSIONAL: Coordinating professional means an architect or professional engineer who coordinates, as qualified, the various professional disciplines involved in a project.⁵

DIRECT SUPERVISION: Direct supervision means the degree of supervision by a person overseeing the work of other persons by which the supervisor has control over and professional knowledge of the work being done.⁶

REGISTERED DESIGN PROFESSIONAL (RDP): An individual who is registered or licensed to practice his or her respective design profession as defined by the statutory requirements of the professional registration laws of Nebraska.

RESPONSIBLE CHARGE: Responsible charge means control and supervision for engineering or architectural work.⁷

TRUSS DESIGN DRAWING: The graphic depiction of an individual truss, which describes the design and physical characteristics of the truss.

TRUSS PLACEMENT DIAGRAM: The illustration supplied by the Truss Manufacturer identifying the location assumed for each Truss, which references each individually designated Truss Design Drawing. The truss placement diagram shall be provided as part of the truss submittal package, and with the shipment of trusses delivered to the jobsite. Truss placement diagrams shall not be required to bear the seal or signature of the truss designer.

Unique Definitions for Structures that require an RDP:

BUILDING DESIGNER: The Owner of the Building contracts with a Registered Design Professional for the design of the Building Structural System and responsibility for the Construction Documents.⁸

TRUSS DESIGN ENGINEER: The individual or organization responsible for the design of Trusses. Each individual truss design drawing shall bear the seal and signature of the Truss Design Engineer.⁹

Unique Definitions for Structures that do not require an RDP:

BUILDING DESIGNER: The Owner of the Building or the individual or organization that contracts with the Owner for the design of the Building Structural System and/or who produces the Construction Documents.¹⁰

TRUSS DESIGNER The individual or organization responsible for the design of trusses.¹¹

View all SBCA *Tech Notes* at www.sbcindustry.com/technotes.php

⁵ The Engineers and Architects Regulation Act Section 81-3408

⁶ The Engineers and Architects Regulation Act Section 81-3411

⁷ The Engineers and Architects Regulation Act Section 81-3425

⁸ Adapted from IBC Section 106.1.

⁹ Adapted from IBC Section 2303.4.1.1.

¹⁰ Adapted from IBC Section 106.1

¹¹ Adapted from IBC Section 2303.4.1.1.